

**The English Computer Translation (provided by the JPO) of  
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**CLAIMS**

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[Claim(s)]

[Claim 1]A picture reproducer which reproduces a sub video image of two or more languages characterized by comprising the following in sync with a main video image and said main video image, and coding data of a sound of a multiple channel.

A main video image read-out decoding means which reads and decodes coding data of said main video image.

A sub video image coding data reading means which reads coding data of a sub video image of said two or more languages.

n decoding means which decode coding data read by said sub video image coding data reading means, and generate decode data.

A mixing circuit which is mixed with said main video image which decoded decode data selected from n decode data decoded by said n decoding means, and is outputted.

[Claim 2]A picture reproducer which reproduces a record signal from a recording medium with which a sub video image of two or more languages characterized by comprising the following in sync with a main video image and said main video image and coding data of a sound of a multiple channel were recorded.

A main video image read-out decoding means which reads and decodes coding data of said main video image from said recording medium.

A sub video image coding data reading means which reads coding data of a sub video image of said two or more languages from said recording medium.

n decoding means which decode coding data read by said sub video image coding data reading means, and generate decode data.

A mixing circuit which is mixed with said main video image which decoded decode data selected from n decode data decoded by said n decoding means, and is outputted.

[Claim 3]A picture reproducer which reproduces a record signal from a recording medium with which a sub video image of two or more languages characterized by comprising the following in sync with a main video image and said main video image and coding data of a sound of a multiple channel were recorded.

A main video image read-out decoding means which reads and decodes coding data of said main video image from said recording medium.

A sub video image coding data reading means which reads coding data of a sub video image of said two or more languages from said recording medium.

A decoding means which decodes coding data read by said sub video image coding data reading means at a usual speed the speed of n times of decoding processing, and generates decode data.

n memory measures which memorize decode data decoded by said decoding means for every language.

A mixing circuit which is mixed with said main video image which decoded decode data selected from n decode data obtained by said n memory measures, and is outputted.

[Claim 4]A picture reproducer of a main video image and a sub video image in sync with said main video image characterized by comprising the following, and a recording medium with which speech information was recorded.

A main video image read-out decoding means which reads and decodes coding data of said main video image from said recording medium.

A sub video image coding data reading means which reads coding data of said sub video image from said recording medium.

A decoding means which decodes coding data read by said sub video image coding data reading means, and generates decode data.

n memory measures which shift decode data decoded by said decoding means one by one, and memorize it.

A mixing circuit which is mixed with said main video image which decoded decode data selected from n decode data obtained by said n memory measures, and is outputted.

[Claim 5]In an image reproduction method which reproduces a sub video image of two or more languages in sync with a main video image and said main video image, and coding data of a sound of a multiple channel, Coding data of said main video image and coding data of a sub video image of said two or more languages are read, respectively, Decode coding data of said read main video image by a decoding means, and coding data of said read sub video image is decoded by n decoding means, An image reproduction method characterized by mixing with said main video image which decoded decode data selected from n decode data decoded by said n decoding means, and making it output.

[Claim 6]In an image reproduction method which reproduces a record signal from a recording medium with which a sub video image of two or more languages in sync with a main video image and said main video image and coding data of a sound of a multiple channel were recorded, Coding data of said main video image and coding data of a sub video image of said two or more languages are read from said recording medium, respectively, Decode coding data of said read main video image by a decoding means, and coding data of said read sub video image is decoded by n decoding means, An image reproduction method characterized by mixing with said main video image which decoded decode data selected from n decode data decoded by said n decoding means, and making it output.

[Claim 7]In an image reproduction method which reproduces a record signal from a recording medium with which a sub video image of two or more languages in sync with a main video image and said image and coding data of a sound of a multiple channel were recorded, Coding data of said main video image and coding data of a sub video image of said two or more languages are read from said recording medium, respectively, Decode coding data of said main video image by a decoding means, and coding data of said read sub video image is decoded by a decoding means the speed of n times of the usual decoding processing speed, An image reproduction method characterized by memorizing decode data decoded by said decoding means by n memory measures for every language, mixing with coding data of said main video image which decoded decode data selected from n decode data obtained by said n memory measures, and making it output.

[Claim 8]In an image reproduction method of a main video image, a sub video image in sync with said main video image, and a recording medium with which speech information was recorded, Coding data of said main video image and coding data of said sub video image are read from said recording medium, respectively, Coding data of a sub video image is decoded for coding data \*\*\*\* of said main video image by a decoding means, respectively, An image reproduction method characterized by shifting a sub video image decoded by said decoding means one by one,

memorizing to n memory measures, mixing with said main video image which decoded decode data selected from n decode data obtained by said n memory measures, and making it output.

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Field of the Invention]It is related with the picture reproducer of the recording medium with which the art of performing record of information and recorded playback of information to a recording medium like an optical disk was started, especially two or more language information was recorded.

[0002]

[Description of the Prior Art]DVD which recorded the video information, the sub picture information, and audio information which carried out compression encoding is released. In this optical disk, sub picture information and audio information are recorded in two or more languages, respectively, and can choose arbitrary languages with the application of an information reproducing device at the time of playback. There are caption data, commentary information, etc. of a movie as sub picture information.

[0003]

[Problem(s) to be Solved by the Invention]In the middle of reproduction, the caption data which are sub picture information currently recorded on the information recording medium were able to display only the title of any one language, although the change of language was possible. Therefore, since it could not display simultaneously as caption data even if it supported two or more languages, SUBJECT that the foreigner could not understand the contents of the movie even if he sees a movie simultaneously with the foreigner (for example, French) who can understand neither Japanese nor English (in the case [ Sound only English ] of a Japanese subtitle) occurred.

[0004]Therefore, it aims at providing the information reproducing device which can see two or more languages simultaneously. It aims at providing the information reproducing device which can save the time and effort which returns a disk until very recently when a person with late reading a title fails to read a title.

[0005]

[Means for Solving the Problem]Provide this invention and a picture reproducer an invention of claim 2, In a picture reproducer which reproduces a record signal from a recording medium with which a sub video image of two or more languages in sync with a main video image and said main video image and coding data of a sound of a multiple channel were recorded, A main video image read-out decoding means which reads and decodes coding data of said main video image from said recording medium, A sub video image coding data reading means which reads coding data of a sub video image of said two or more languages from said recording medium, n decoding means which decode coding data read by said sub video image coding data reading means, and generate decode data, A picture reproducer provided with a mixing circuit which is mixed with said main video image which decoded decode data selected from n decode data decoded by said n decoding means, and is outputted is provided, In a picture reproducer which reproduces a record



signal from a recording medium with which a sub video image of two or more languages with which an invention of claim 3 synchronizes with a main video image and said main video image, and coding data of a sound of a multiple channel were recorded, A main video image read-out decoding means which reads and decodes coding data of said main video image from said recording medium, and a sub video image coding data reading means which reads coding data of a sub video image of said two or more languages from said recording medium, A decoding means which decodes coding data read by said sub video image coding data reading means at a usual speed the speed of n times of decoding processing, and generates decode data, n memory measures which memorize decode data decoded by said decoding means for said every language, A picture reproducer provided with a mixing circuit which is mixed with said main video image which decoded decode data selected from n decode data obtained by said n memory measures, and is outputted is provided, In a picture reproducer of a recording medium for which a main video image, a sub video image in sync with said main video image, and speech information were recorded as for an invention of claim 4, A main video image read-out decoding means which reads and decodes coding data of said main video image from said recording medium, A sub video image coding data reading means which reads coding data of said sub video image from said recording medium, A decoding means which decodes coding data read by said sub video image coding data reading means, and generates decode data, and n memory measures which shift decode data decoded by said decoding means one by one, and memorize it, A picture reproducer provided with a mixing circuit which is mixed with said main video image which decoded decode data selected from n decode data obtained by said n memory measures, and is outputted is provided, In an image reproduction method that an invention of claim 5 reproduces a sub video image of two or more languages in sync with a main video image and said main video image, and coding data of a sound of a multiple channel, Coding data of said main video image and coding data of a sub video image of said two or more languages are read, respectively, Decode coding data of said read main video image by a decoding means, and coding data of said read sub video image is decoded by n decoding means, An image reproduction method characterized by mixing with said main video image which decoded decode data selected from n decode data decoded by said n decoding means, and making it output is provided, In an image reproduction method which reproduces a record signal from a recording medium with which a sub video image of two or more languages with which an invention of claim 6 synchronizes with a main video image and said main video image, and coding data of a sound of a multiple channel were recorded, Read coding data of said main video image, and coding data of a sub video image of said two or more languages from said recording medium, respectively, and coding data of said main video image is decoded by a decoding means, Provide an image reproduction method characterized by mixing with said main video image which decoded decode data selected from n decode data which decoded coding data of said read sub video image by n decoding means, and was decoded by said n decoding means, and making it output, and an invention of claim 7, In an image reproduction method which reproduces a record signal from a recording medium with which a sub video image of two or more languages in sync with a main video image and said image and coding data of a sound of a multiple channel were recorded, Coding data of said main video image and coding data of a sub video image of said two or more languages are read from said recording medium, respectively, Decode coding data of said main video image by a decoding means, and coding data of said read sub video image is decoded by a decoding means the speed of n times of the usual decoding processing speed, Decode data decoded by said decoding means is memorized by n memory measures for said every language, An image reproduction method characterized by mixing with coding data of said main video image which decoded decode data selected from n decode data obtained by said n memory measures, and making it output is provided, In an image reproduction method of a recording medium for which a main video image, a sub video image in sync with said main video image, and speech information were recorded as for an invention of claim 8, Coding data of said main video image and coding data of said sub video image are read from said

recording medium, respectively, Coding data of a sub video image is decoded for coding data \*\*\*\* of said main video image by a decoding means, respectively, Shift a sub video image decoded by said decoding means one by one, and it memorizes to n memory measures, To an image reproduction method characterized by mixing with said main video image which decoded decode data selected from n decode data obtained by said n memory measures, and making it output. A picture reproducer which reproduces a sub video image of two or more languages with which an invention of claim 1 synchronizes with a main video image and said main video image in order to solve this SUBJECT characterized by comprising the following, and coding data of a sound of a multiple channel.

A main video image read-out decoding means which reads and decodes coding data of said main video image.

A sub video image coding data reading means which reads coding data of a sub video image of said two or more languages.

n decoding means which decode coding data read by said sub video image coding data reading means, and generate decode data.

A mixing circuit which is mixed with said main video image which decoded decode data selected from n decode data decoded by said n decoding means, and is outputted.

[0006]

[Embodiment of the Invention]The 1st example of the picture reproducer of this invention is described with a figure below. Drawing 1 is a block diagram showing the hardware constitutions of the system in the example of this invention.

[0007]As shown in drawing 1, DVD reproducer 100 which is a picture reproducer is provided with the following.

The pickup 2 which reproduces an RF signal from the recording medium (DVD) 1.

RF circuit 3 which the RF signal reproduced by this pickup 2 is supplied, and performs binarization processing of this RF signal, etc.

The data decoder 4 which the regenerative data from RF circuit 3 is supplied, and decodes an error correction etc.

The demultiplexer 5 which distributes the regenerative data in which decoding was carried out by the data decoder 4 to video compressed data, sub picture compressed data, and audio compression data.

[0008]Here, the title and text which are sub picture data, and audio information have various kinds of languages, and two or more languages to decode are chosen. This is chosen according to control of the system control part 12.

[0009]The video compressed data separated by the demultiplexer 5 is supplied to the video decoder 6, and decoding corresponding to the method of the display is performed. For example, a conversion process is carried out to NTSC, PAL, SECAM, a wide screen, etc. The sub picture compressed data separated by the demultiplexer 5 is supplied to the sub picture decoder 7, and is decoded as a title or a character image.

[0010]The video data decoded by the video decoder 6 is inputted into the adding machine 9, and is added with the title from the sub picture decoder 7, and a character image here, and this added output is drawn by the video output terminal 10. The audio information separated by the demultiplexer 5 is supplied to the audio decoder 8, gets over, and is drawn by the audio output terminal 11.

[0011]DVD reproducer 100 is provided with the following.

The system control part 12 which controls the pickup 2, RF circuit 3, the data decoder 4, the demultiplexer 5, the video decoder 6, the sub picture decoder 7, and the audio decoder 8.

The remote control operating section 13 to which a user does the operational input of this system control part 12.

[0012]As shown in drawing 2, the recording medium 1 which this DVD reproducer 100 reproduces is made into the unit of one work of a movie, etc., and is recorded by Video Object Set (henceforth VOBS).

[0013]Said VOBS comprises two or more Video Object (henceforth VOB). DVD is constituted so that it may become story development which is [ whole VOB ] different corresponding to the multi-story function in which he can see one movie by two or more story development, for example. And VOB is constituted by two or more cells Cell.

[0014]Said cell Cell serves as units, such as one scene in a movie, for example. That is, the combination for every scene of this serves as VOB, and constitutes the above-mentioned multi-story function etc. by the difference in this combination. And the cell Cell is constituted by two or more video object unit Video ObjectUnit (henceforth VOBUnit).

[0015]And one VOBUnit comprises one navigation pack (NVCK), two or more audio packs (APCK), two or more video packs (VPCK), and two or more sub picture packs (SPPCK).

[0016]A navigation pack (NVCK) is used as control data for performing the control data for performing repeat display control of the data in VOBUnit which mainly belongs, and the data search of VOBUnit.

[0017]A video pack (VPCK) is main video image information, and is compressed by standards, such as MPEG. A sub picture pack (SPPCK) is sub video information which has auxiliary contents to a main video image. An audio pack (APCK) is speech information.

[0018]One example of the packet of a sub picture is shown in drawing 3. The information on a sub picture serves as a pack string, and is recorded on the data area. That is, one pack (SPPCK) is arranged in order of a pack header, a packet header, substream ID, and sub picture data. In the demultiplexer, the high order bit of stream ID described by the pack header and substream ID is referred to, and a judgment of SPPCK is made.

[0019]And if the stream which should be reproduced is chosen and determined based on control of the system control part 12, It can distribute by the demultiplexer 5, and the packet which the lower bit of substream ID of a packet is referred to, and has substream ID corresponding to the selected stream is supplied to the sub picture decoder 7, and is decoded.

[0020]DVD reproducer 100 of this invention is constituted so that the title data of two or more languages may be reproduced simultaneously. The detail view of the sub picture decoder (sub picture decoder 7 of drawing 1) of this invention DVD reproducer is shown in drawing 4.

[0021]As shown in drawing 4, this DVD reproducer is provided with the following.

The 1st sub picture decoder 71 that changes the sub picture compressed data from the demultiplexer 5 with the changeover switch 70 for every title data of each country, and is supplied, respectively, the 2nd sub picture decoder 72, and the n-th sub picture decoder 73. The mixing circuit 74 which mixes the decoded image (title) data outputted, respectively from this 1st video decoder 71, the 2nd video decoder 72, and the n-th sub picture decoder 73.

[0022]The picture (title) data mixed here is chosen with the switches 71S, 72S, and 73S, and only the selected image data is mixed in the mixing circuit 74. It is the feature that this invention is provided with n sub picture decoders whose number is usually one.

[0023]DVD reproducer 100 constituted in this way, By the mixing circuit 74. The decoding title data outputted from the 1st sub picture decoder 71. The decoding title data outputted from the 2nd sub picture decoder 72 and the decoding title data outputted from the n-th sub picture decoder 73 are mixed and outputted to the video data outputted from the video decoder 6 with the adding machine 9.

[0024]In this way, with mixing and outputting, the decoding sub picture data which constitute the 1st caption data from the 1st sub picture decoder 71 are outputted, for example, When the decoding sub picture data which constitute the 2nd caption data from the 2nd sub picture decoder 72 are outputted, as shown in drawing 5 (a) and drawing 5 (b), It becomes possible to



display simultaneously the 1st title data (shown in drawing 5 (a).), and the 2nd title data (shown in drawing 5 (b).) (shown in drawing 5 (c).).

[0025]The block lineblock diagram of the 2nd example of the sub picture decoder of the picture reproducer of this invention is shown in drawing 6. Form the changeover switch 76 after the sub picture decoder 75, and The 1st [ per title data of each country ] title data memory 77, the 2nd title data memory 78, and the n-th title data memory 79, It has the mixing circuit 74 which mixes the decoding title data outputted, respectively from this 1st title data memory 77, the 2nd title data memory 78, and the n-th title data memory 79.

[0026]The image data mixed here is chosen with the switches 77S, 78S, and 79S, and only the selected image data is mixed in the mixing circuit 74. In this composition, it is necessary to make processing speed of the sub picture decoder 75 one the processing speed of this n times in the case of the sub picture decoder of the usual decoding processing speed of drawing 4.

[0027]When the recording medium 1 as shown in drawing 1 is reproduced with DVD reproducer 100 next, it explains below about how a sub picture stream is determined. Since the sub picture of two or more languages is recorded on the recording medium 1, when playback equipment is started, multiple selection of the arbitrary sub pictures can be made. If playback equipment starts playback, the management information of an optical disk will be read, it will let the demultiplexer 5 pass after a recovery and an error correction, and the system control part 12 will be supplied.

[0028]The system control part 12 reads a linguistic code, and grasps what kind of language exists as a sub picture. If the menu screen of two or more titles, such as Japanese, English, French, and German, is displayed as shown in drawing 7 for example, a televiewer will operate the remote control operating section 13 for the channel of hope, and will choose two or more titles out of it. Thus, the reproduction stream of a sub picture is determined by choosing some.

[0029]The 3rd example of the picture reproducer of this invention is described with a figure below. As shown in drawing 8, this example is the DVD reproducer constituted so that the picture reproducer concerning this invention might be applied and DVD might be reproduced. Although the DVD reproducer used as this example does not display the title of two or more nations but the title itself displays the title of one nation, it has composition which can display the title to the n piece forward.

[0030]Therefore, as shown in drawing 8, this DVD reproducer the composition of a sub picture decoder, The title data processed by the sub picture decoder is incorporated into the 1st title data memory 77, The title data which suited the 2nd title data memory 78 of title data which suited the 1st title data memory 77 when title data was newly inputted into the 1st title data memory 77 at the 2nd title data memory 78 is shifted to the following title data memory one by one.

[0031]It is also possible to hold without shifting with the switches 80 and 81. It has the mixing circuit 74 which mixes each decoding title data outputted from each title data memory 77, 78, and 79. The image data mixed here is chosen with the switches 77S, 78S, and 79S, and only the selected image data is mixed in the mixing circuit 74.

[0032]The monitor display of the DVD reproducer used as the aforementioned example is shown in drawing 9. Drawing 9 (a) is the example which displayed the title in front of one, and drawing 9 (b) is the example which held the wished title. Since DVD reproducer 100 constituted in this way can display the title of a n-piece before, when a person with late reading a title fails to read a title, it can save the time and effort which returns a disk until very recently.

[0033]It is also possible to hold titles of hope, such as a title which was not able to be read well, continuing reproduction by the remote control operating section 13. It can prevent failing to read a title by carrying out like this.

[0034]

[Effect of the Invention]According to this invention, the caption data which are sub picture information transmitted or reproduced by displaying the title of two or more languages simultaneously, Even if he sees a movie simultaneously with the foreigner (for example, French)

who can understand neither Japanese nor English (a sound is only English), the foreigner can understand the contents of the movie by displaying a Japanese subtitle and a French title. It is effective also when learning language study by displaying many mosquito languages.

[0035] Since the title of a n-piece before can be displayed according to this invention, when a person with late reading a title fails to read a title, the time and effort which returns a disk until very recently can be saved.

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**DESCRIPTION OF DRAWINGS**

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[Brief Description of the Drawings]

[Drawing 1] It is a block diagram showing the hardware constitutions of the system of the 1st example of the picture reproducer of this invention.

[Drawing 2] It is a figure showing one example of the composition of the video object set (VOBS) transmitted.

[Drawing 3] It is a figure showing the composition of the data packet of a sub picture.

[Drawing 4] The detailed block lineblock diagram of the sub picture decoder of the 1st example of the picture reproducer of this invention is shown.

[Drawing 5] The screen of the title of two languages of the 1st example of the picture reproducer of this invention is shown.

[Drawing 6] The detailed block lineblock diagram of the sub picture decoder of the 2nd example of the picture reproducer of this invention is shown.

[Drawing 7] The title selection menu screen of the 2nd example of the picture reproducer of this invention is shown.

[Drawing 8] The detailed block lineblock diagram of the sub picture decoder of the 3rd example of the picture reproducer of this invention is shown.

[Drawing 9] The monitor display of the 3rd example of the picture reproducer of this invention is shown, respectively.

[Description of Notations]

1 Recording medium (DVD)

2 Pickup

3 RF circuit

4 Data decoder

5 Demultiplexer

6 Video decoder

7, 75 sub-picture decoder

8 Audio decoder

9 Adding machine

10 Video output terminal

11 Audio output terminal

12 System control part

13 Remote control operating section

70, 76, 80, 81 changeover switches

71 The 1st sub picture decoder

71S, 72S, 73S, 77S, 78S, and 79S Switch

72 The 2nd sub picture decoder

73 The n-th sub picture decoder

74 Mixing circuit

77 1st title data memory

78 2nd title data memory

79 n-th title data memory

100 DVD reproducer (recording-medium playback equipment)

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[Translation done.]